Syllogeus 52

A Distributional Atlas of Records of the Marine Fishes of Arctic Canada in the National Museums of Canada and Arctic Biological Station

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National Museums of Canada | Musées nationaux du Canada
National Museum of Natural Sciences | Musée national des sciences naturelles

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A distributional atlas of records of the marine fishes of Arctic Canada in the National Museums of Canada and Arctic Biological Station

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National Museum of Natural Sciences

National Museums of Canada

Musée national des sciences naturelles

Les Musées nationaux du Canada

Ottawa, 1984

ABSTRACT

Spot distribution maps are provided for species of fishes in the marine waters of Arctic Canada between Alaska and Labrador, James Bay and the North geographic pole, as well as freshwater records from the Canadian Arctic Archipelago. Only records from the Arctic Biological Station (Fisheries and Oceans Canada), and the National Museum of Natural Sciences, National Museums of Canada are included; literature records are excluded. A number of range extensions are mapped. Only 85 of the 137 species known from Arctic Canada are represented in our records/collections and are mapped.

Gaps in our knowledge of distribution of our Arctic fish resources are pointed out. Recommendations are made for further exploration so that these resources may be better appreciated, developed and protected. At present we must rely on sparse Russian, American and Danish investigations for our knowledge of deepwater and offshore fishes in the Canadian Sector of the Arctic.

Key words: Arctic Canada, marine fishes, freshwater fishes, distribution, maps, Arctic Archipelago, Arctic Ocean, Hudson Bay, Beaufort Sea.

RÉSUMÉ

L'aire de répartition des poissons des eaux marines de l'Arctique canadien entre l'Alaska et le Labrador, la baie James et le Pôle Nord géographique, a été cartographiée dans cet ouvrage à l'aide de points de référence. Apparaissent aussi des renseignements provenant des eaux douces de l'Archipel arctique canadien. Seules les données détenues par la station biologique arctique, Pêcheries et Océans Canada, et par le Musée national des sciences naturelles, Musées nationaux du Canada, sont fournies. Les stations provenant de la littérature sont exclues. On a cartographié quelques extensions d'aire. Des 137 espèces rapportées dans l'Artique canadien, seulement 85 sont représentées dans nos collections et ces 85 espèces sont cartographiées.

On dénote des lacunes dans la distribution des poissons arctiques et on recommande une exploration plus poussée afin que ces animaux soient mieux appréciés, aménagés et protégés. Nos connaissances actuelles des poissons des eaux profondes et pélagiques de l'Arctique canadien se limitent à quelques relevés russes, américains et danois.

ACKNOWLEDGEMENTS

Among numerous Arctic Biological Station employees who collected valuable specimens and data in the field, often under difficult weather and insect conditions, we venture to single out: Ingram G. Gidney, Joseph Bray, Jean Boulva, Margaret Breton Jones, Gus Bruinsma, and Alphonse Voudrach. At the National Museum of Natural Sciences the late Stanley W. Gorham, Thomas A. Willock, Jennifer A. Lewis, and Jadwiga A. Frank catalogued fishes by hand or computer, often when the air in the Beamish warehouse was green with formalin fumes, enabling retrieval of Arctic data for this paper, and S.D. MacDonald collected valuable specimens from unexplored regions. Mary Hunter typed the pentultimate draft of the manuscript. Judy L. Camus proofread the text.

To these persons and to those who are unnamed here but recorded in our permanent field and laboratory records, we express our deepest thanks.

INUKTITUT ABSTRACT

ᓄᓇᕗᑦ ᑯᓘᑎᓪᓗᒍ ᓄᓇᓕᒫᓂᖅ ᐊᑐᓕᕆᓂᖅ ᓄᓇᖃᑎᒌᓂᖅ ᐊᖏᓚᖓᔪᓂᒃᓴᓂᖅ ᐱᓕᕆᔨᓂᖅ ᐅᑭᐅᓂᒃ ᑲᑎᒪᔨᓂᖅ ᐊᑐᓕᕆᓂᖅ, ᓴᓇᔨᓂᖅ ᐊᑐᓕᕆᓂᖅ ᐱᓕᕆᔨᓂᒃ ᐅᑭᐅᓂᒃ ᑲᑎᒪᔨᓂᒃ

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INTRODUCTION

The purpose of this atlas is to make available distribution records of marine fishes in Arctic Canada. The atlas summarizes collection records from field work carried out since 1947 by members of the Arctic Biological Station and the National Museums of Canada, as well as prior collections in the Museum back to 1875. Together these represent some 3000 records and 85 species. Our resources do not permit us to map records from the Arctic literature in our bibliography of some 990 references (Robinson, McAllister and Steigerwald MS).

Frequent requests for our data lead us to publish these maps in advance of publication of planned detailed systematic and life history studies. The maps also make available a number of range extensions. We hope these maps will be useful to the Inuit and Dene peoples, resource developers, scientists, anglers, and naturalists.

Area Covered

The geographic area covered is shown in Fig. 1. This includes the Canadian sector of the Arctic from the Alaska-Yukon boundary north to the North geographic pole, south along 60 degrees west longitude to opposite Cape Union, Ellesmere Island, then along the mid-point between Canada's eastern Arctic and Greenland to 60 degrees north latitude, west to the northern tip of Labrador and along the coasts of Ungava Bay, Hudson Strait and Bay and the mainland Arctic coast to the Alaskan border. Collections of fishes occurring in the marine and brackish waters above about 10 to 13 parts per thousand salinity are included. In addition we include those records of fishes in the freshwaters of the Arctic Archipelago as most are tolerant of brackish if not salt water and the maps of freshwater fish distribution in Lee et al. (1980) omitted the northernmost Arctic Archipelago.

Basis of Records

Two types of records are included. Firstly, field records of the Arctic Biological Station are shown on the species maps (Pl. 1 to 21) by solid triangles. The distribution of Arctic Biological Station records for all species is shown on Fig. 2. Many of these fishes were sampled primarily for life history data. Not all personnel were expert in fish identification and records involving taxonomically difficult groups should be regarded as tentative until verified.

The second type of record is based on specimens deposited in the National Museum of Natural Sciences, Ottawa (Fig. 3). These consist of specimens collected by the Arctic Biological Station, the National Museum of Natural Sciences, and other individuals and agencies. Museum records are shown on the species maps by solid circles. Taxonomic revisions of a number of Arctic families and genera are still wanting or under way, so some museum identifications cannot be taken as certain. Questionable identifications based on young specimens and poorly preserved material have been shown to genus only or omitted.

Methods

Records, stored on disks in the IKTHOS mini-computer system (McAllister, Murphy, and Morrison, 1978), were plotted on base maps using the computer's plotter. Lettraset symbols were then placed over those plotted by the computer to increase legibility. The symbols may in some cases represent several samples taken at a single locality or within a few kilometres of one another. Note that the diameter of the circle (used for Museum records) and the side of the triangle (Arctic Biological Station records) is about 80 kilometres. Plates 1 to 21 show the distribution of species from the Station and Museum records.

Collections catalogued since 1979 were not yet computerized when our plates were prepared. Enquiries for documentation of any museum record should be directed to the third author at the National Museum of Natural Sciences. Data will be retrieved by computer free of charge for small requests, but a charge may be levied for time consuming requests.

Stations made and hydrographic data collected during fisheries investigations by the Arctic Biological Station from 1947 to 1979 inclusive may be consulted in J.G. Hunter and S.T. Leach (1983a,b). The number of Canadian marine fish collections and specimens for each species deposited in the National Museum of Natural Sciences are listed in Steigerwald and McAllister (1982).

Classification

Classification of fishes, Inuktitut names, French and English vernacular names, and scientific names, may be found in McAllister, Hunter and Legendre (MS) and McAllister (MS). Literature on marine fishes of Arctic Canada is summarized in Robinson, McAllister and Bélanger Steigerwald (MS).

Sampling

Our two deepest collections were taken at 570 and 340 m, but most were shallower than 50 m. The majority of littoral and sublittoral collections were taken by seine and gill net, those in deeper water principally by otter trawls. Specimens were also occasionally collected by midwater trawling, jigging, angling, long lining, scuba diving, dipnetting, by hand, and other techniques.

The majority of collections were made in July and August, during the summer open water period. Very few collections were made during winter months, and only a few in spring and fall.

RECOMMENDATIONS FOR FUTURE RESOURCE EXPLORATION

Figures 2 and 3 show that sampling in the Arctic waters, with the exception of a few specific shallow inshore regions, has been light, although the large spots and scale of the map exaggerate the apparent extent of sampling. A number of important geographic, bathymetric and ecological zones have either been poorly sampled or not at all. The offshore fishes of the Canadian Basin of the Arctic Ocean are better explored by the Russians and Americans, and Baffin Bay and Davis Strait by the Danes, than by Canadians. However, a few benthic collections have been made by the Biological Station in Newfoundland and recently surface collections of small and larval fishes have been made by contract employees of oil companies interested in offshore oil drilling in Davis Strait.

The fauna of the offshore waters of Canada's inland sea, Hudson Bay, is almost entirely unrepresented in Canada's museums and only one or two brief reports in the 1930s deals with offshore fishes in the middle of the bay.

South of Barrow Strait the fauna of the waters of the central Arctic Archipelago is little explored. A few collections from shallow areas are the only representation of the entire fauna of these unexplored regions. The fishes of our northernmost islands, the Queen Elizabeth Islands, are less well known than those of McMurdo Sound in Antarctica.

The North Canadian Basin lies in the Canadian sector of the Arctic between the North Pole and Lomonosov Ridge, the Yukon Territory and the Arctic Archipelago. This includes depths of over 4 kilometres, and seamonts rising over 1.5 kilometres from the abyssal plain. The fauna of this region is virtually unknown from Canadian studies but has been touched upon by Russian and American investigators working from drifting ice islands.

Most of our knowledge of Arctic fishes is drawn from studies in June, July and August. Thus important segments of life cycles are unknown. The establishment of a permanent Arctic marine biological station in the High Arctic might provide many valuable returns. An adequate baseline Arctic marine exploration program with modern equipment for deep and midwater sampling would enormously enhance our knowledge of the under-ice world. At the same time it would offer the opportunity for the participation and training of Inuit students.

The increased knowledge from undersea exploration of our little-known sovereign Arctic regions would enable us to develop, protect and appreciate our unknown Arctic marine resources.

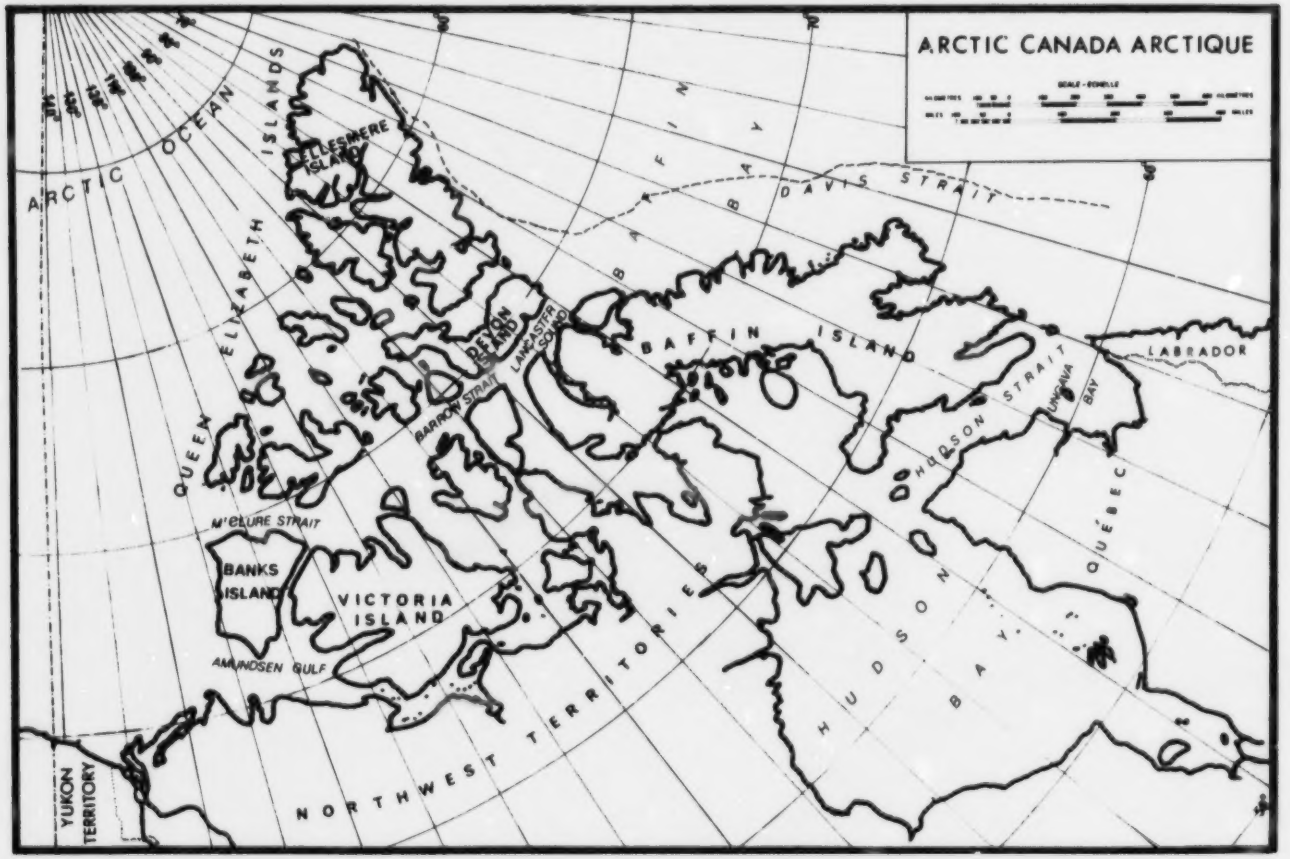


Fig. 1. The region covered by the atlas is delimited by the following borders: from the North Pole south to the Alaska-Yukon border and south from the Pole along 60 degrees west longitude to and along the border between Greenland and Canada extended south to 60 degrees north latitude, then west to the northern tip of Labrador and along the Arctic mainland coast of Canada to the Alaskan border. Only records from waters more saline than 10-13 PPT are included except that records from the freshwaters of the Canadian Arctic Archipelago are also plotted.

Fig. 2. Location of ichthyological sampling sites for records of the Arctic Biological Station, Ste-Anne-de-Bellevue, in Arctic Canadian waters.

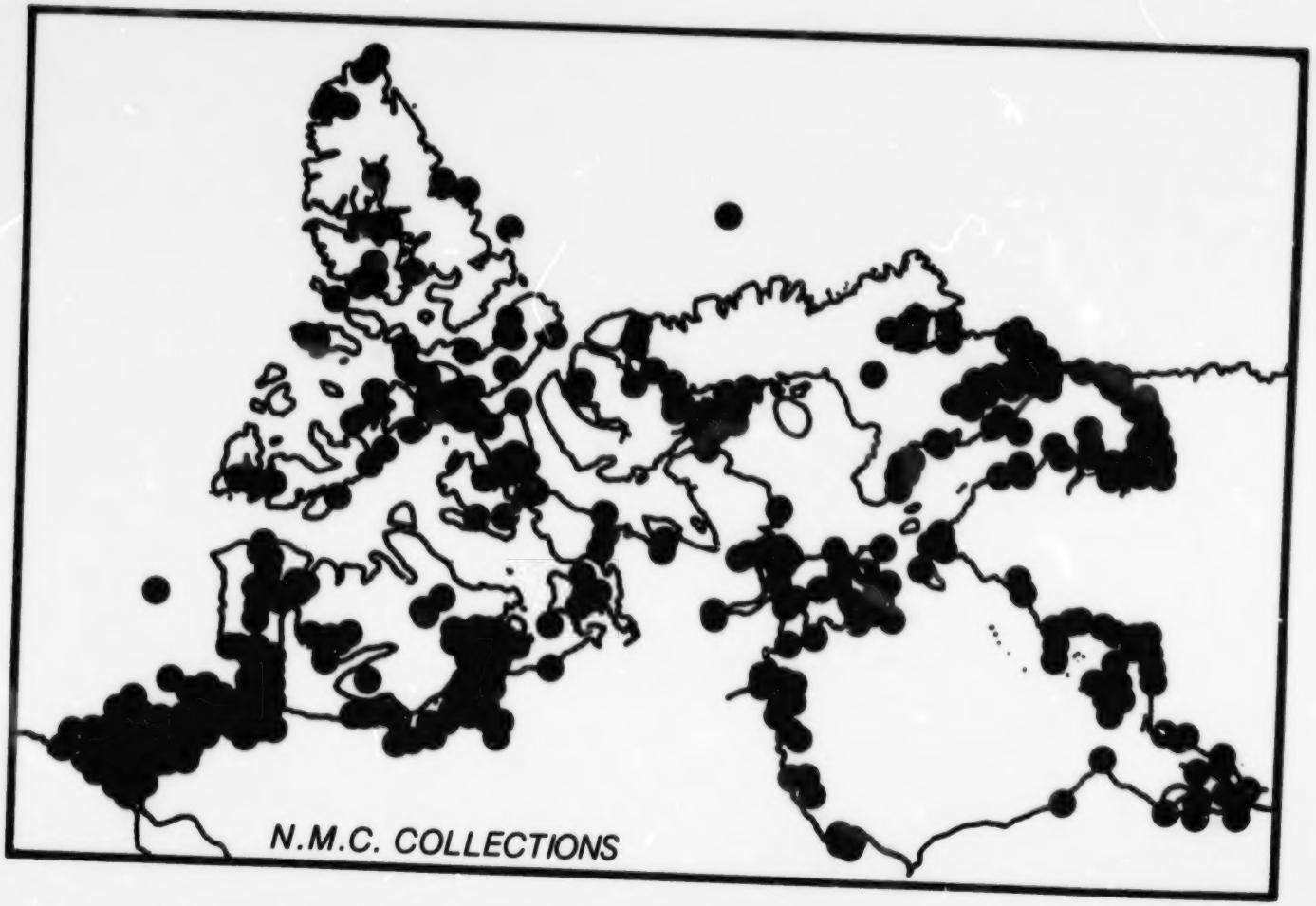
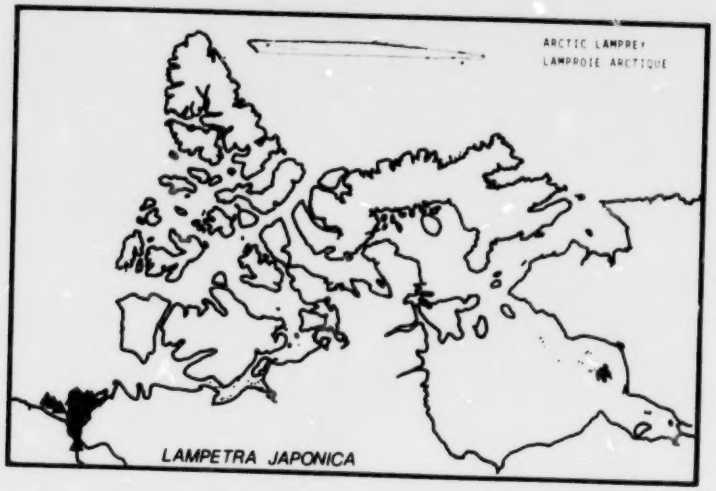


Fig. 3. Location of ichthyological collecting sites for records of the National Museum of Natural Sciences, National Museums of Canada, Ottawa, in Arctic Canadian waters up until 1979.


ARCTIC LAMPREY
LAMPROIE ARCTIQUE
LAMPETRA JAPONICA

THORNY SKATE
RAIE ÉPINEUSE
RAJA SP.
RAJA RADIATA

PACIFIC HERRING
HARENG DU PACIFIQUE
CLUPEA HARENGUS PALLASI

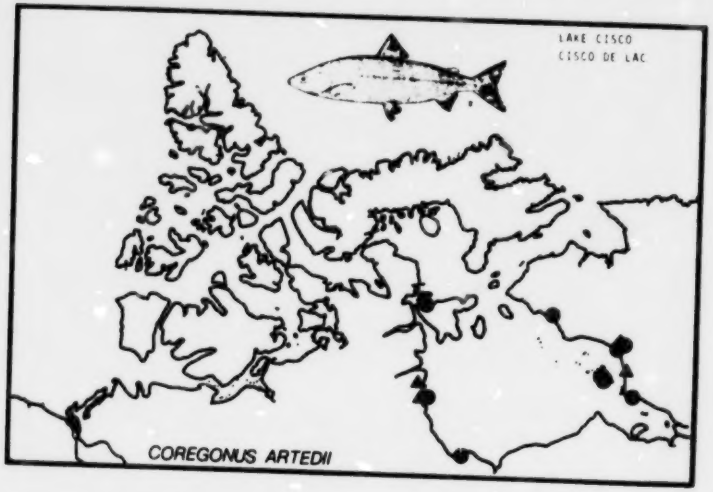
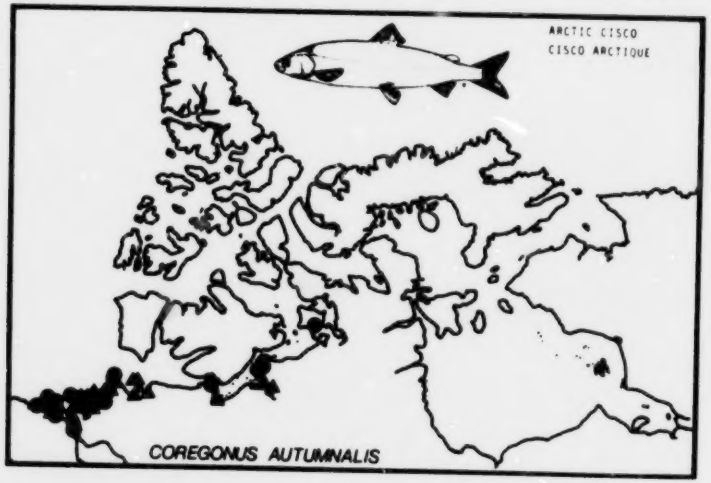
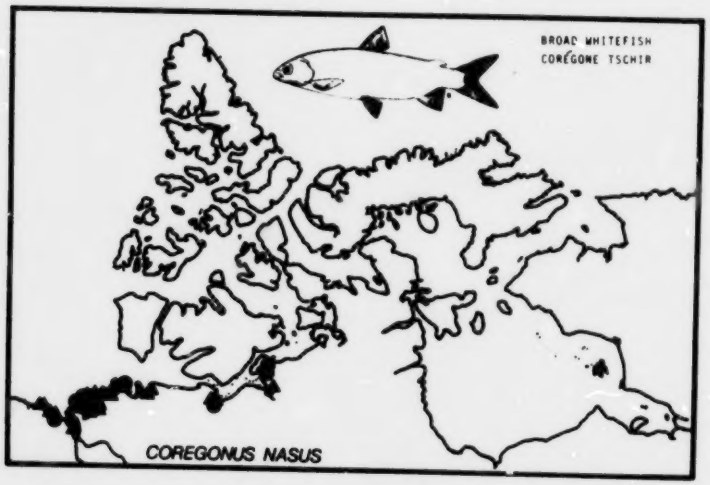

LAKE CISCO
CISCO DE LAC
COREGONUS ARTEDII

Plate 1


ARCTIC CISCO
CISCO ARCTIQUE
COREGONUS AUTUMNALIS

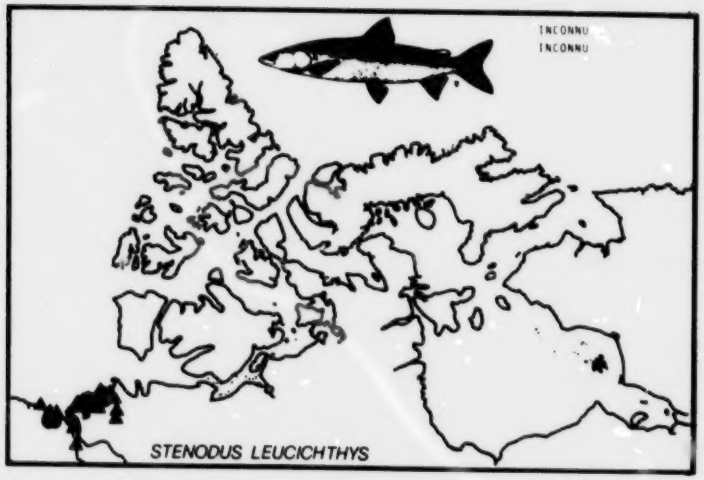
LAKE WHITEFISH
GRAND CORÉGONE
COREGONUS CLUPEAFORMIS


BROAD WHITEFISH
CORÉGONE TSCHIR
COREGONUS NASUS

LEAST CISCO
CISCO SARDINELLE
COREGONUS SARDINELLA

Plate 2

ROUND WHITEFISH
MÉNOMINI ROND
PROSOPIUM CYLINDRACEUM


INCONNU
INCONNU
STENODUS LEUCICHTHYS

PINK SALMON
SAUMON ROSE
ONCORHYNCHUS GORBUSCHA

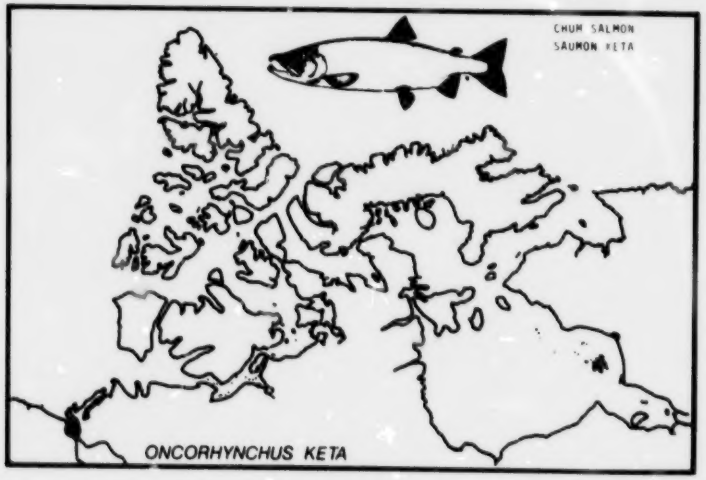
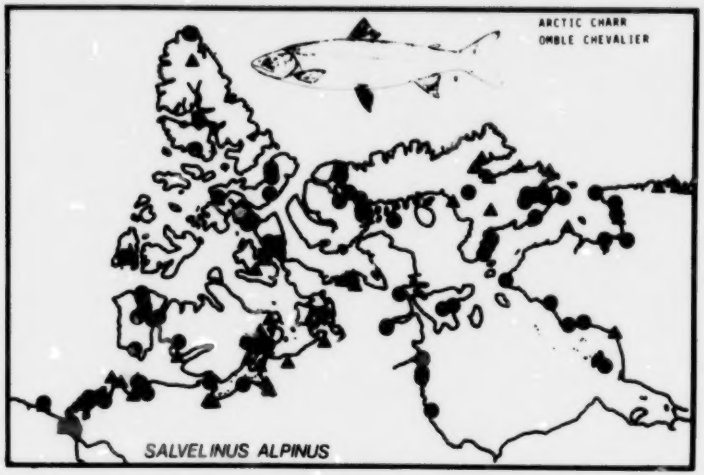
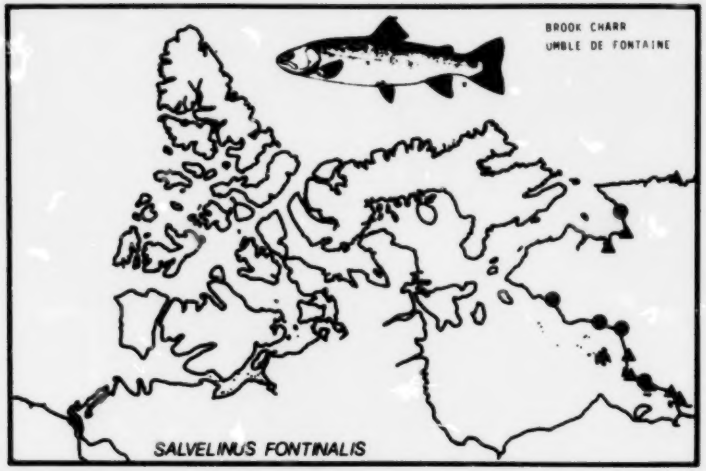

CHUM SALMON
SAUMON KETA
ONCORHYNCHUS KETA

Plate 3

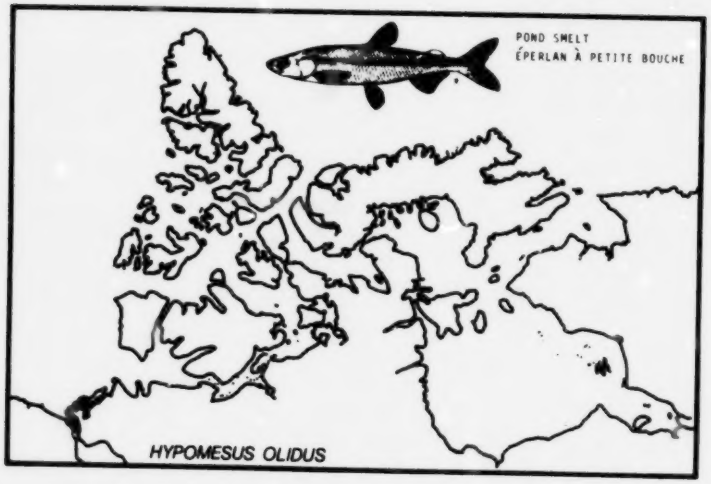
ATLANTIC SALMON
SAUMON ATLANTIQUE
SALMO SALAR


ARCTIC CHARR
OMBLE CHEVALIER
SALVELINUS ALPINUS

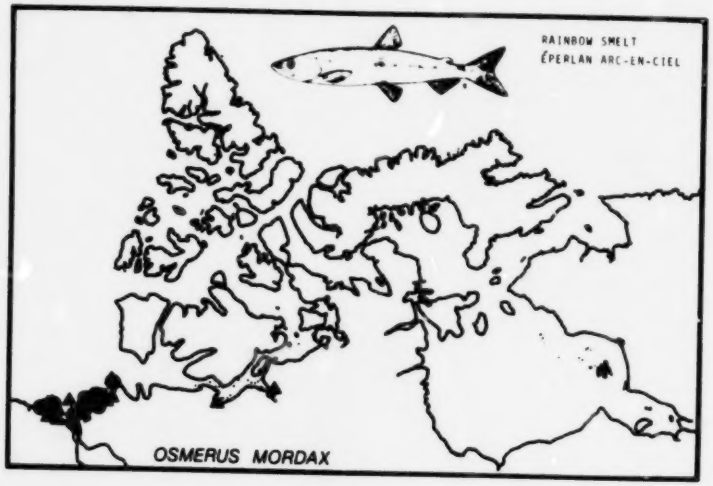

BROOK CHARR
OMBLE DE FONTAINE
SALVELINUS FONTINALIS

LAKE CHARR
TOULADI
SALVELINUS NAMAYCUSH

Plate 4

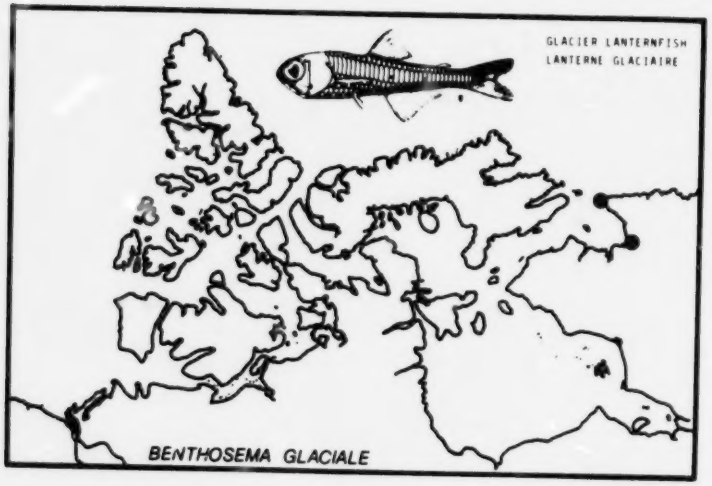

POND SMELT
ÉPERLAN À PETITE BOUCHE
HYPOMESUS OLIDUS

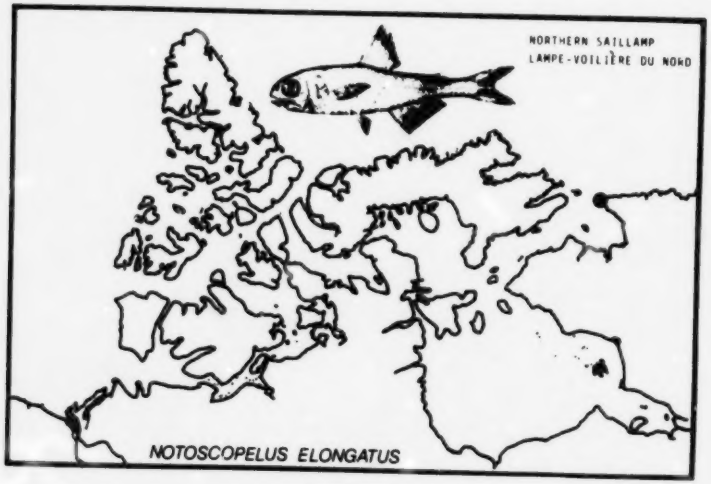
CAPELIN
CAPELAN
MALLOTUS VILLOSUS


RAINBOW SMELT
ÉPERLAN ARC-EN-CIEL
OSMERUS MORDAX

LONGNOSE SUCKER
MEUNIER ROUGE
CATOSTOMUS CATOSTOMUS

Plate 5


GLACIER LANTERNFISH
LANTERNE GLACIAIRE
BENTHOSEMA GLACIALE

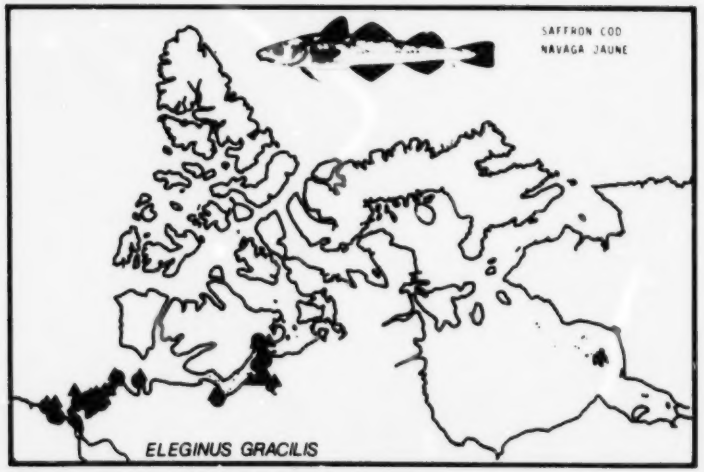

NORTHERN SAILLAMP
LAMPE-VOILIÈRE DU NORD
NOTOSCOPELUS ELONGATUS

TOOTHED COD
SAIDA BARBU
ARCTOGADUS BORISOVI

POLAR COD
SAIDA IMBERBE
ARCTOGADUS GLACIALIS

Plate 6

ARCTIC COD
SAÏDA FRANC
BOREOGADUS SAIDA


SAFFRON COD
NAVAGA JAUNE
ELEGINUS GRACILIS

ATLANTIC COD
MORUE FRANCHE
GADUS MORHUA

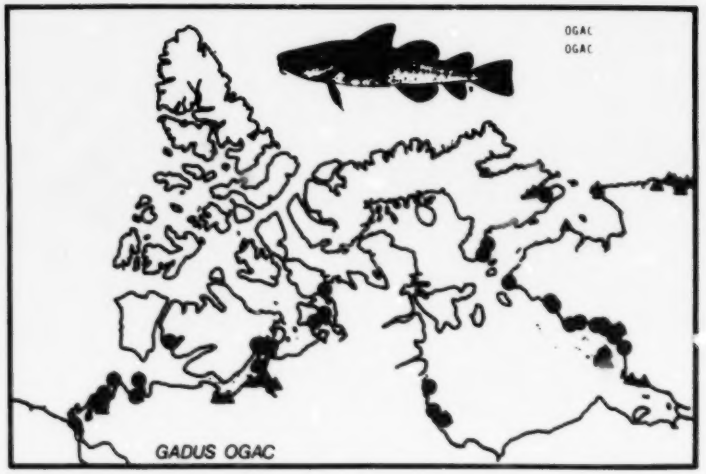
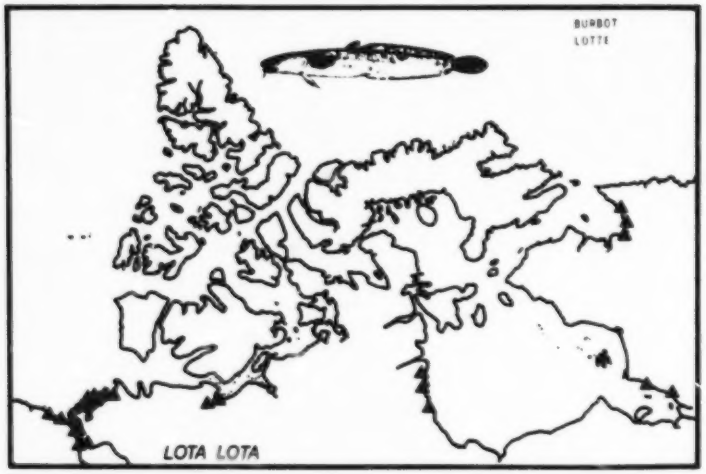

OGAC
OGAC
GADUS OGAC

Plate 7


BURBOT
LOTTE
LOTA LOTA

BIGEYE UNERNAK
UNERNAK À GRANDS YEUX
GYMNELUS HEMIFASCIATUS

AURORA UNERNAK
UNERNAK AURORE
GYMNELUS RETRODORSALIS

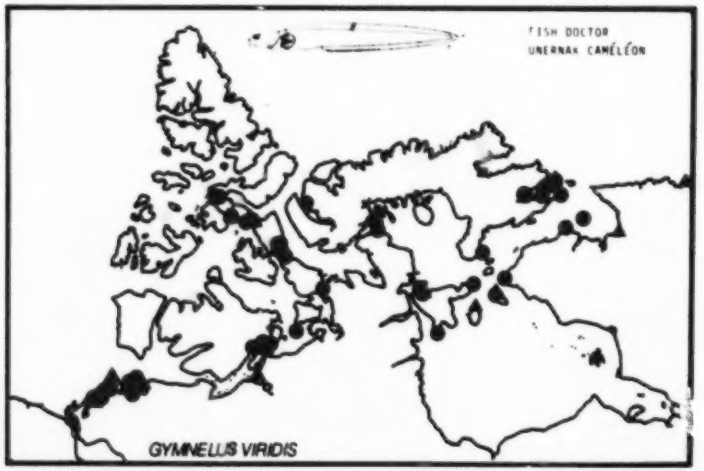
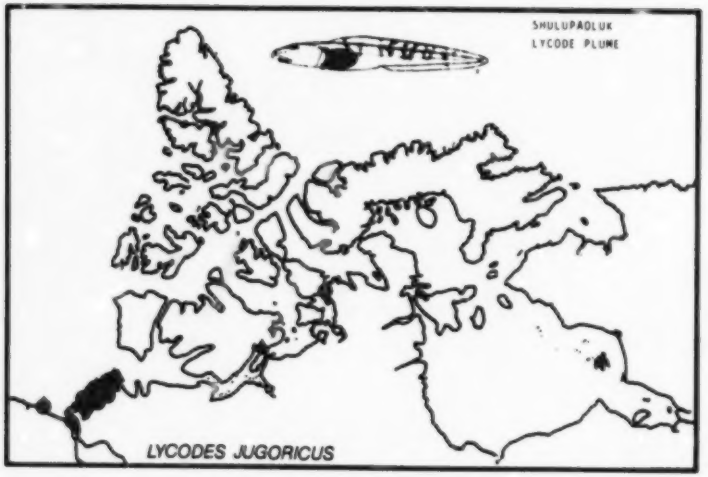
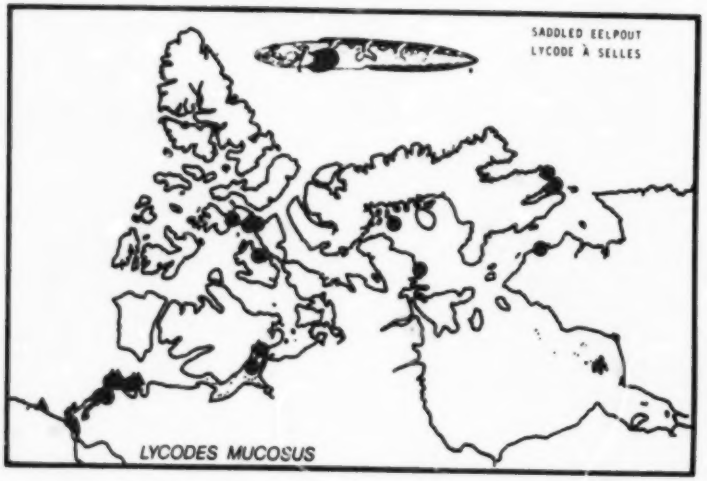
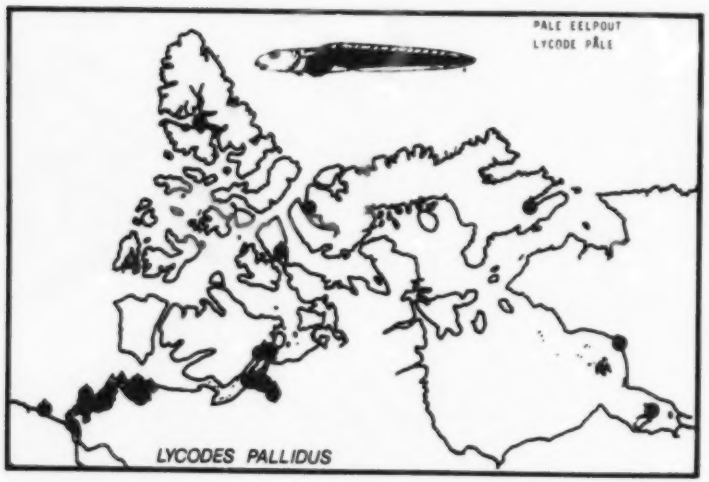

FISH DOCTOR
UNERNAK CAMÉLÉON
GYMNELUS VIRIDIS

Plate 8


SHULUPAOLUK
LYCODE PLUME
LYCODES JUGORICUS


SADDLED EELPOUT
LYCODE À SELLES
LYCODES MUCOSUS


PALE EELPOUT
LYCODE PÂLE
LYCODES PALLIDUS

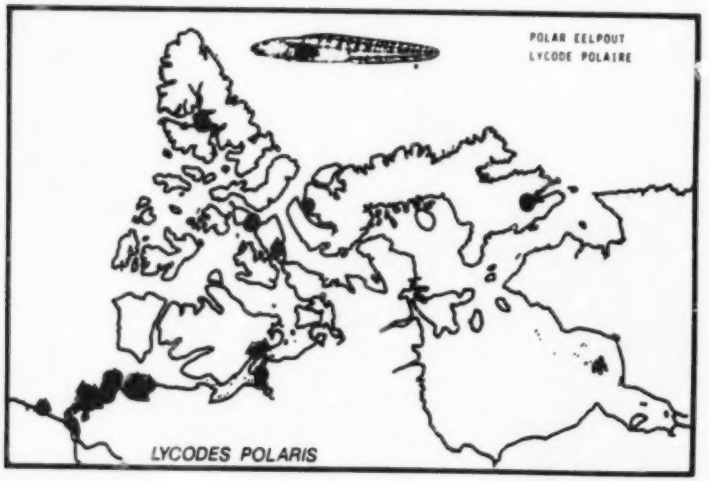
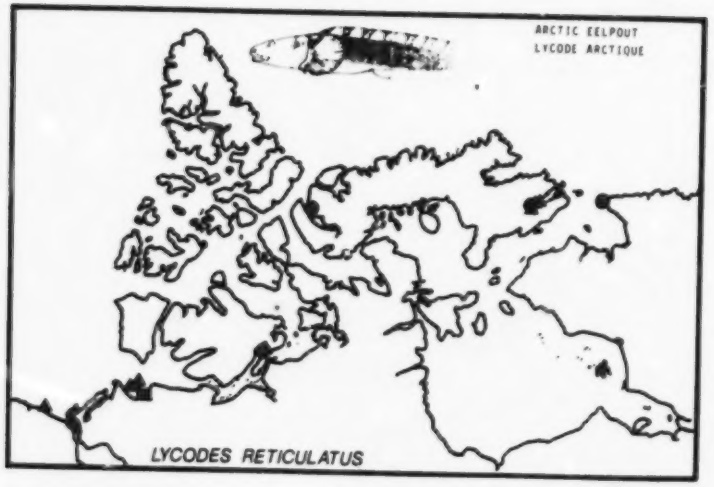
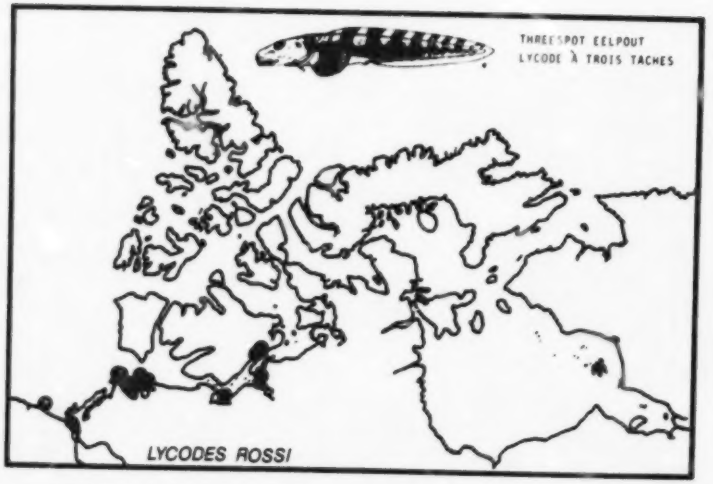
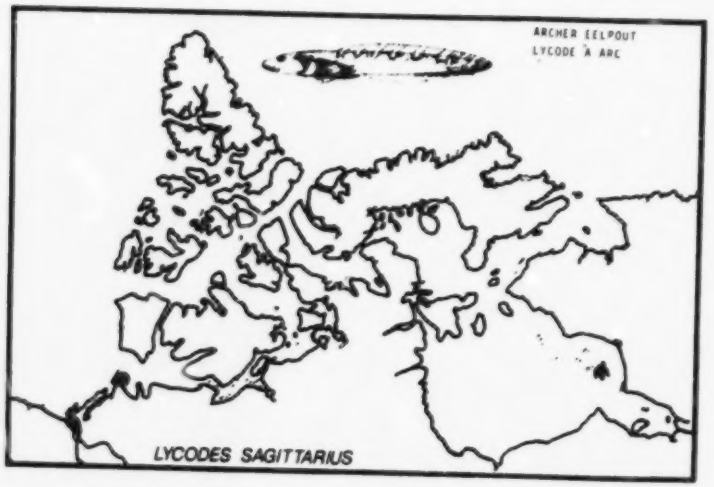

POLAR EELPOUT
LYCODE POLAIRE
LYCODES POLARIS

Plate 9


ARCTIC EELPOUT
LYCODE ARCTIQUE
LYCODES RETICULATUS


THREESPOT EELPOUT
LYCODE À TROIS TACHES
LYCODES ROSSI


ARCHER EELPOUT
LYCODE À ARC
LYCODES SAGITTARIUS

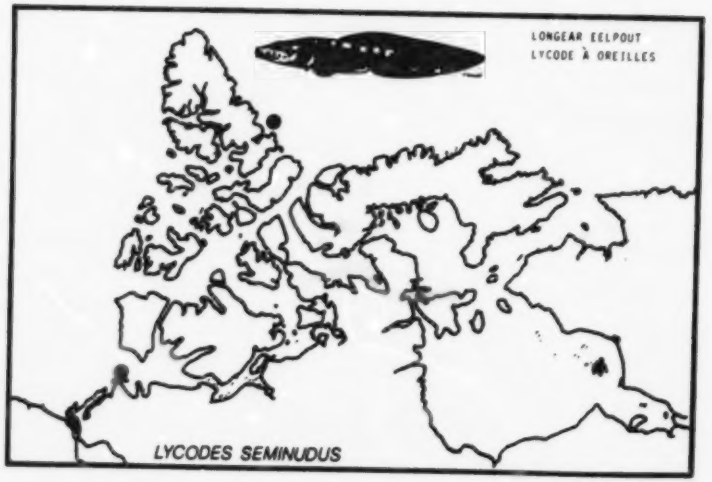

LONGEAR EELPOUT
LYCODE À OREILLES
LYCODES SEMINUDUS

Plate 10

NORTHERN WOLFFISH
LOUP À TÊTE LARGE
ANARHICHAS SP.
ANARHICHAS DENTICULATUS

BERING WOLFFISH
LOUP DE BERING
ANARHICHAS ORIENTALIS

FOURLINE SNAKEBLENNY
QUATRE-LIGNES ATLANTIQUE
EUMESOGRAMMUS PRAECISUS

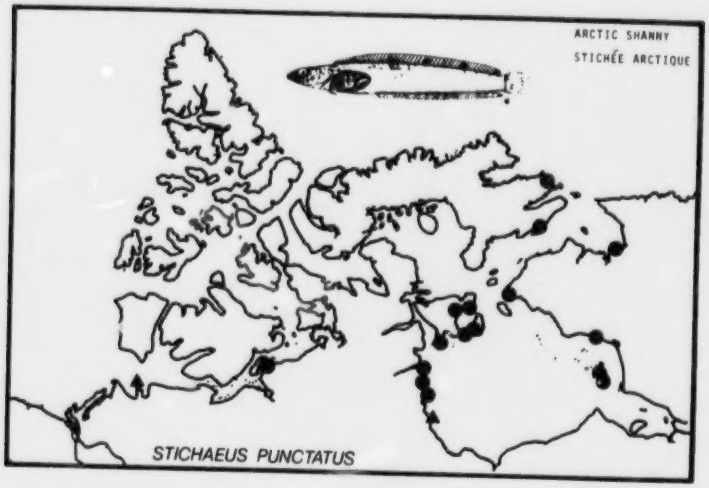
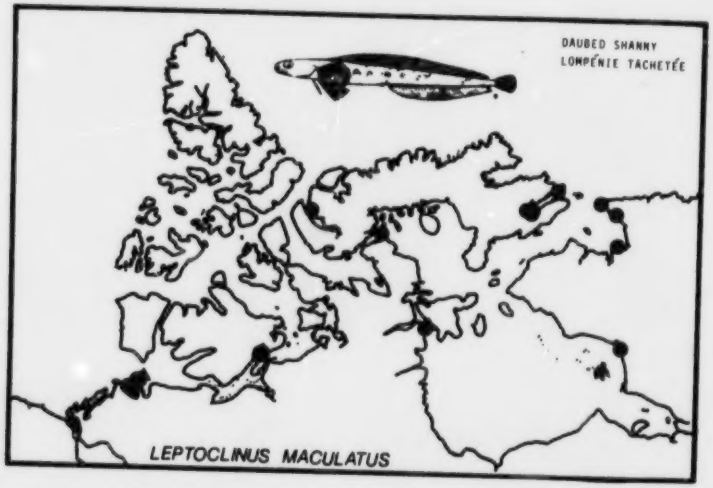

ARCTIC SHANNY
STICHÉE ARCTIQUE
STICHAEUS PUNCTATUS

Plate 11

BLACKLINE PRICKLEBACK
TERRASSIER À SIX LIGNES
ACANTHOLUMPENUS MACKAYI

STOUT EELBLENNY
LOMPÉNIE NAINE
ANISARCHUS MEDIUS


DAUBED SHANNY
LOMPÉNIE TACHETÉE
LEPTOCLINUS MACULATUS

SLENDER EELBLENNY
LOMPÉNIE ÉLANCÉE
LUMPENUS FABRICII

Plate 12

BANDED GUNNEL
SIGOUINE RUBANÉE
PHOLIS FASCIATA

NORTHERN SAND LANCE
LANÇON DU NORD
AMMODYTES DUBIUS

STOUT SAND LANCE
LANÇON GOURDEAU
AMMODYTES HEXAPTERUS

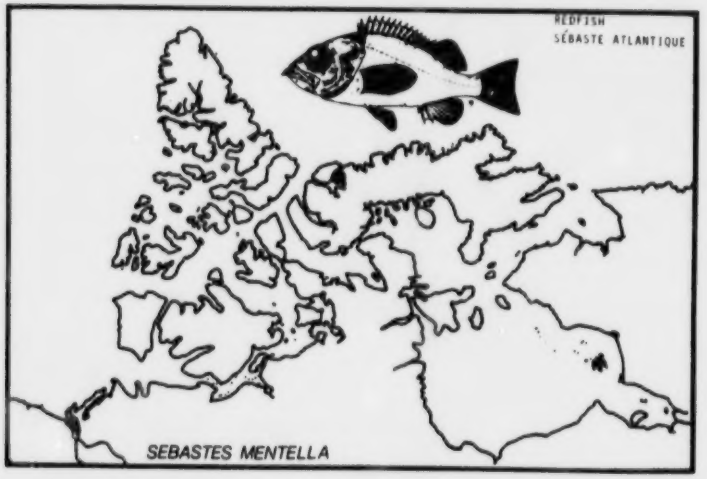
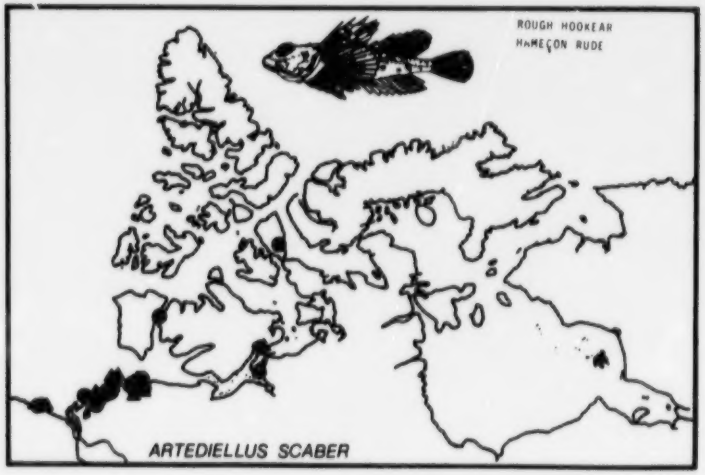
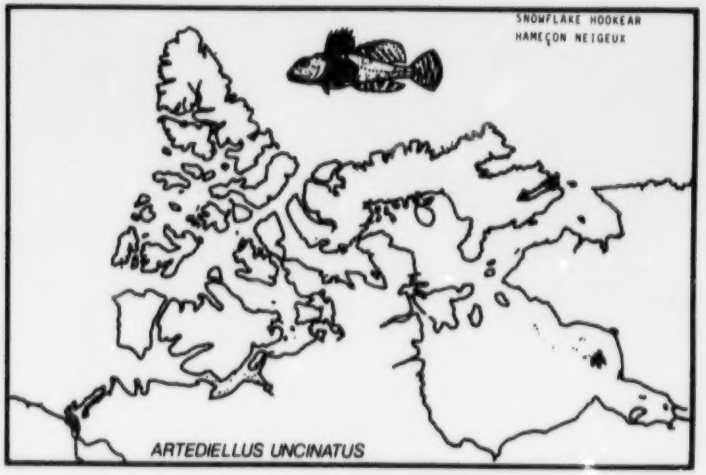
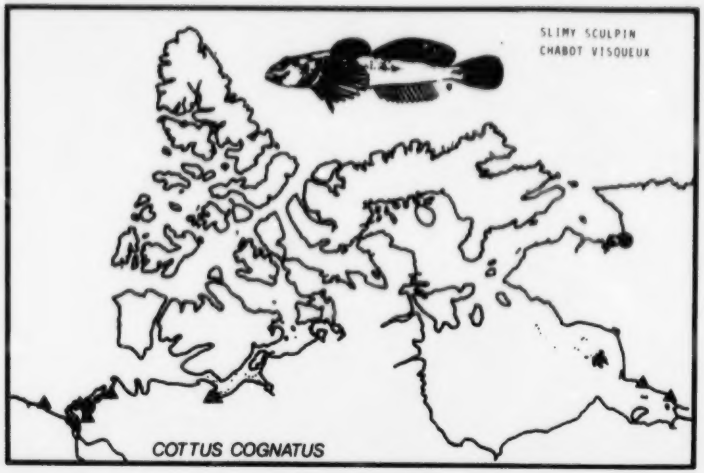

REDFISH
SÉBASTE ATLANTIQUE
SEBASTES MENTELLA

Plate 13


ROUGH HOOKEAR
HAMEÇON RUDE
ARTEDIELLUS SCABER


SNOWFLAKE HOOKEAR
HAMEÇON NEIGEUX
ARTEDIELLUS UNCINATUS


SLIMY SCULPIN
CHABOT VISQUEUX
COTTUS COGNATUS

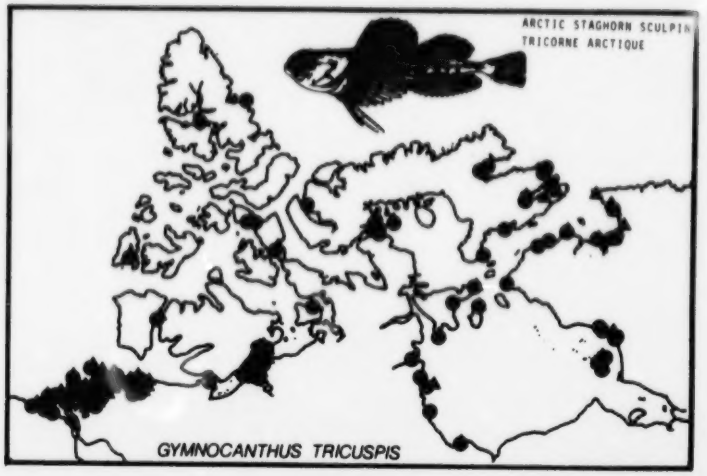
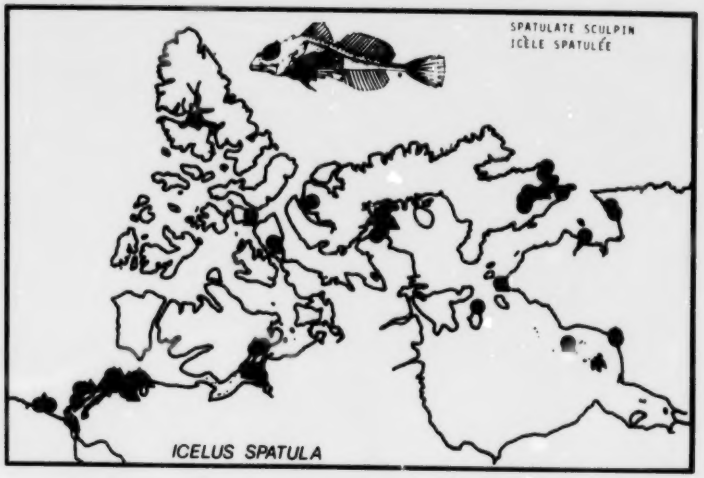

ARCTIC STAGHORN SCULPIN
TRICORNE ARCTIQUE
GYMNOCANTHUS TRICUSPIS

Plate 14

TWOHORN SCULPIN
ICÈLE À DEUX CORNES
ICELUS BICORNIS


SPATULATE SCULPIN
ICÈLE SPATULÉE
ICELUS SPATULA

FOURHORN SCULPIN
CHABOISSEAU À QUATRE CORNES
MYOXOCEPHALUS QUADRICORNIS

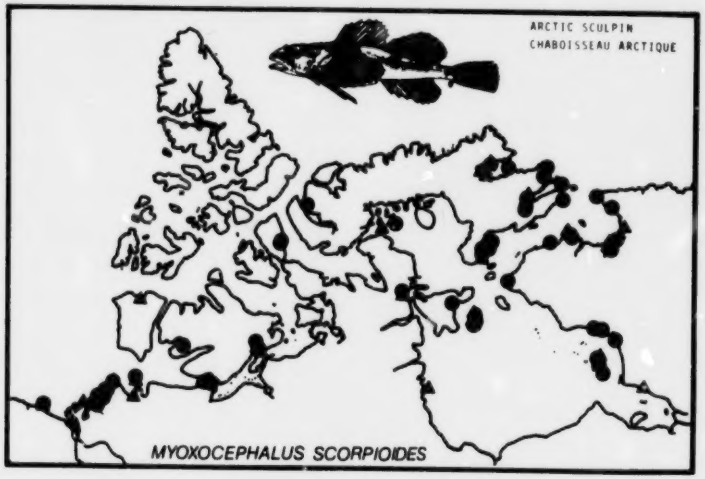
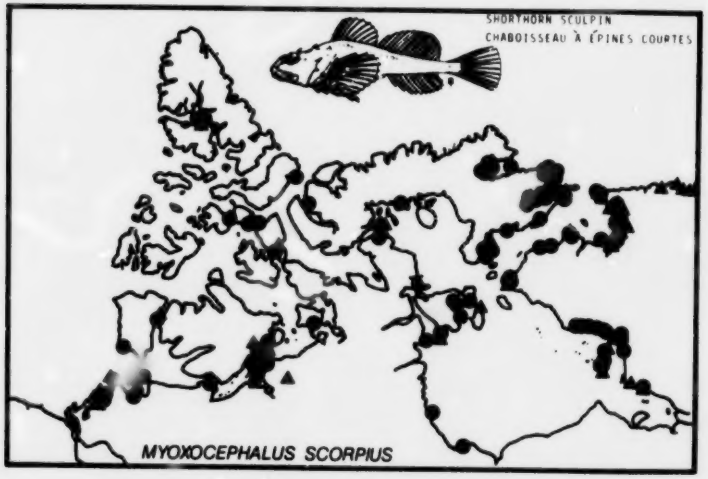
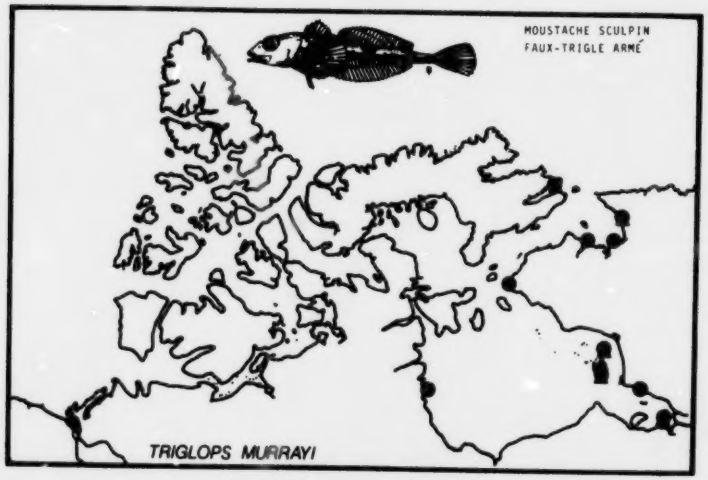
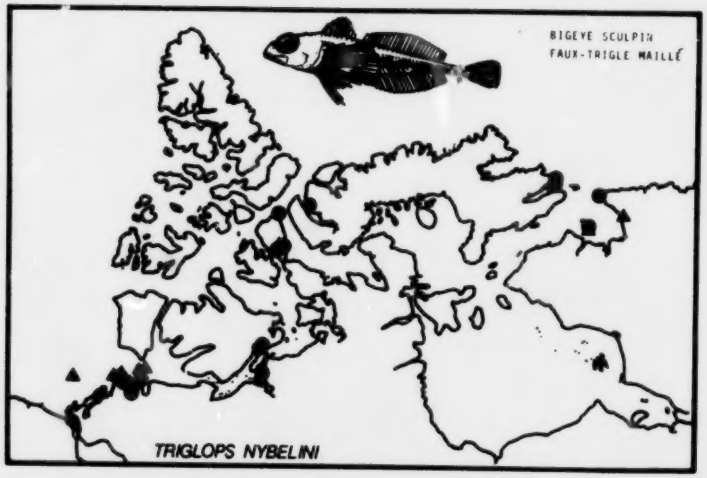

ARCTIC SCULPIN
CHABOISSEAU ARCTIQUE
MYOXOCEPHALUS SCORPIOIDES

Plate 15


SHORTHORN SCULPIN
CHABOISSEAU À ÉPINES COURTES
MYOXOCEPHALUS SCORPIUS


MOUSTACHE SCULPIN
FAUX-TRIGLE ARMÉ
TRIGLOPS MURRAYI


BIGEYE SCULPIN
FAUX-TRIGLE MAILLÉ
TRIGLOPS NYBELINI

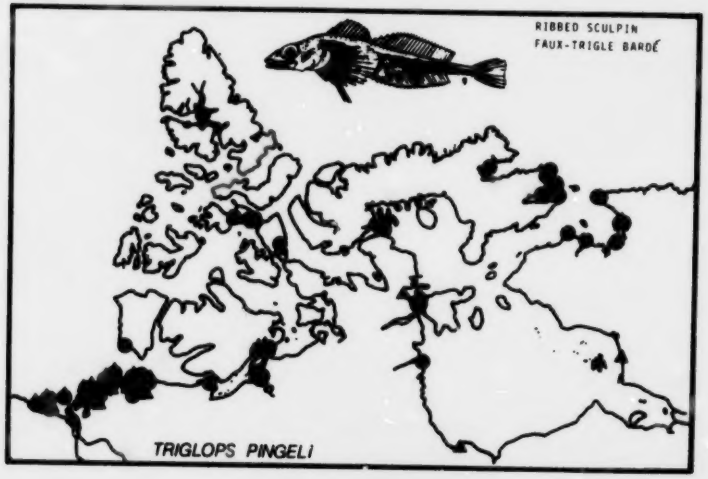

RIBBED SCULPIN
FAUX-TRIGLE BARDÉ
TRIGLOPS PINGELI

Plate 16

ARCTIC ALLIGATORFISH
POISSON-ALLIGATOR ARCTIQUE
ASPIDOPHOROIDES OLRIKI

ATLANTIC POACHER
AGONE ATLANTIQUE
LEPTAGONUS DECAGONUS

SMOOTH LUMPFISH
PETITE POULE DE MER DOUCE
CYCLOPTEROPSIS JORDANI

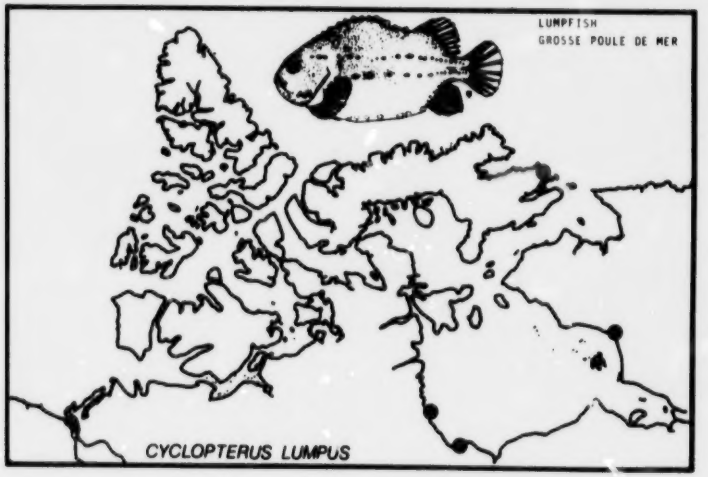
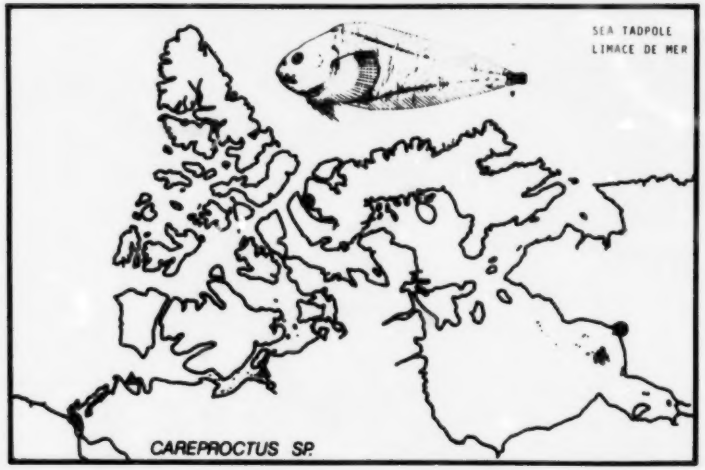

LUMPFISH
GROSSE POULE DE MER
CYCLOPTERUS LUMPUS

Plate 17

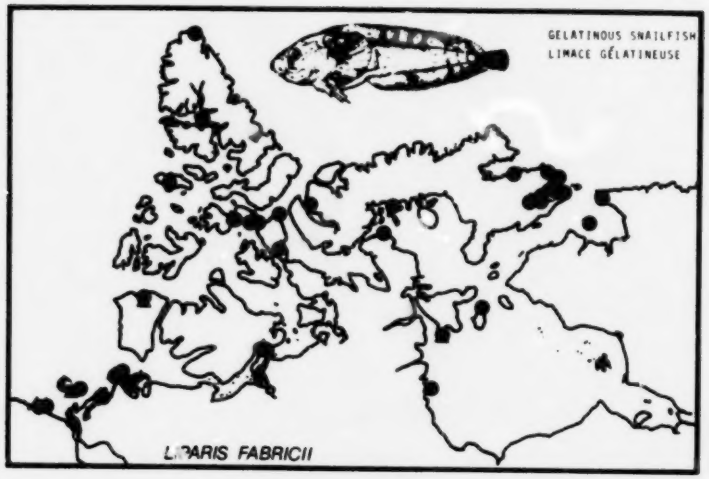
LEATHERFIN LUMPSUCKER
PETITE POULE DE MER ARCTIQUE
EUMICROTREMUS DERJUGINI

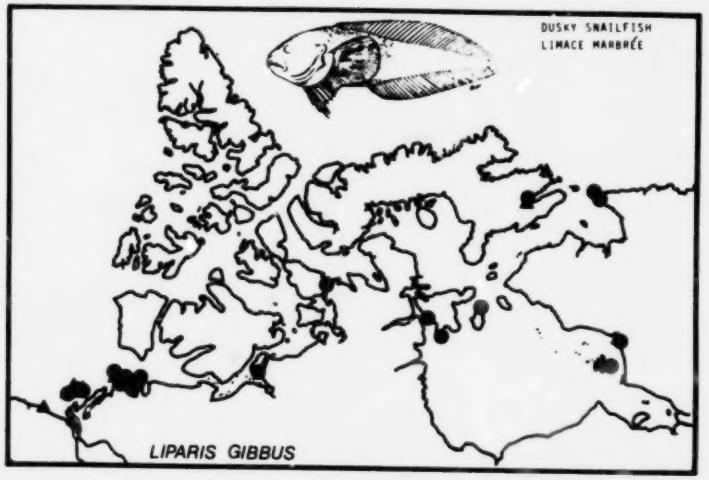
ATLANTIC SPINY LUMPSUCKER
PETITE POULE DE MER ATLANTIQUE
EUMICROTREMUS SPINOSUS

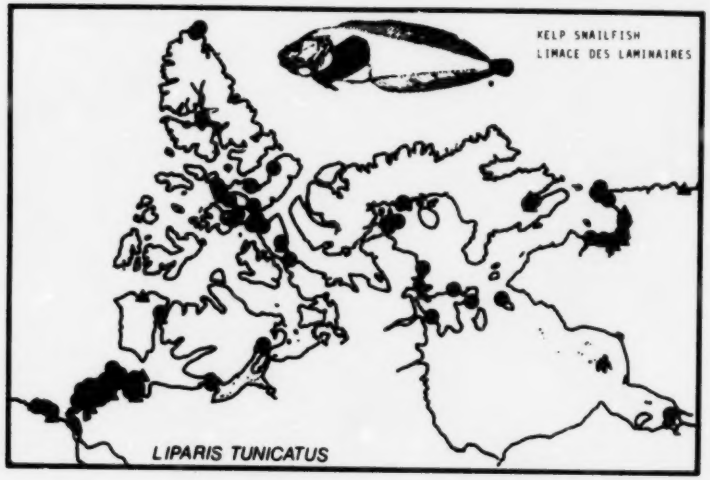

SEA TADPOLE
LIMACE DE MER
CAREPROCTUS SP.

ATLANTIC SNAILFISH
LIMACE ATLANTIQUE
LIPARIS ATLANTICUS

Plate 18


GELATINOUS SNAILFISH
LIMACE GÉLATINEUSE
LIPARIS FABRICII


DUSKY SNAILFISH
LIMACE MARBRÉE
LIPARIS GIBBUS


KELP SNAILFISH
LIMACE DES LAMINAIRES
LIPARIS TUNICATUS

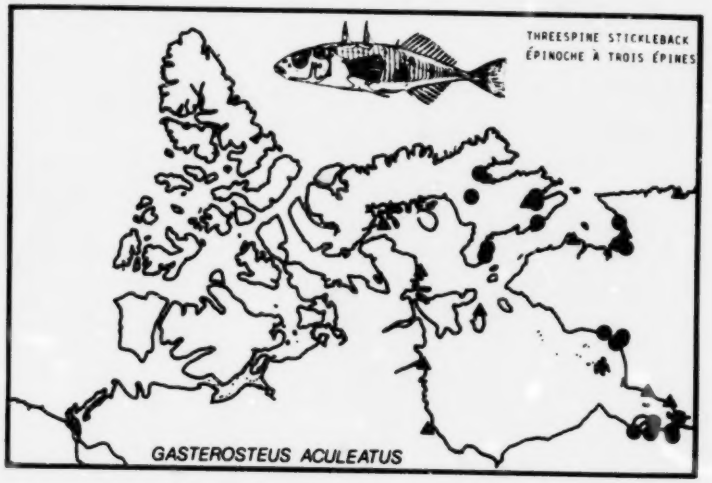
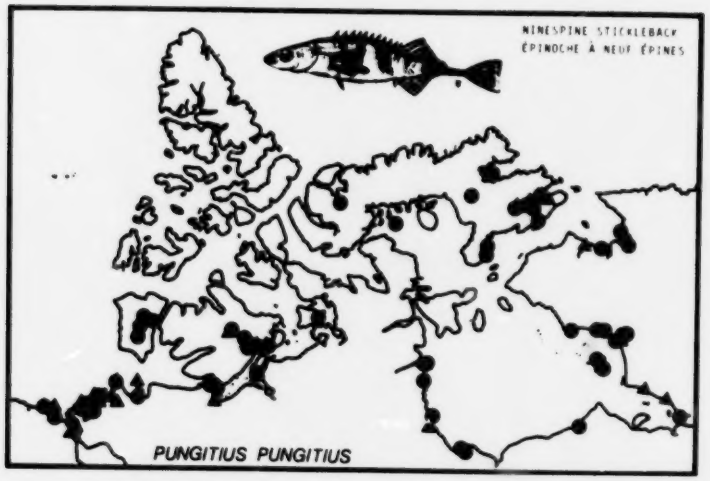
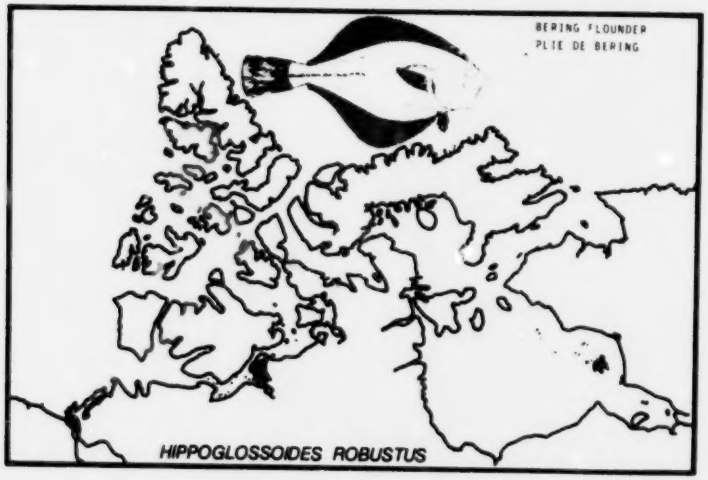

THREESPINE STICKLEBACK
ÉPINOCHE À TROIS ÉPINES
GASTEROSTEUS ACULEATUS

Plate 19

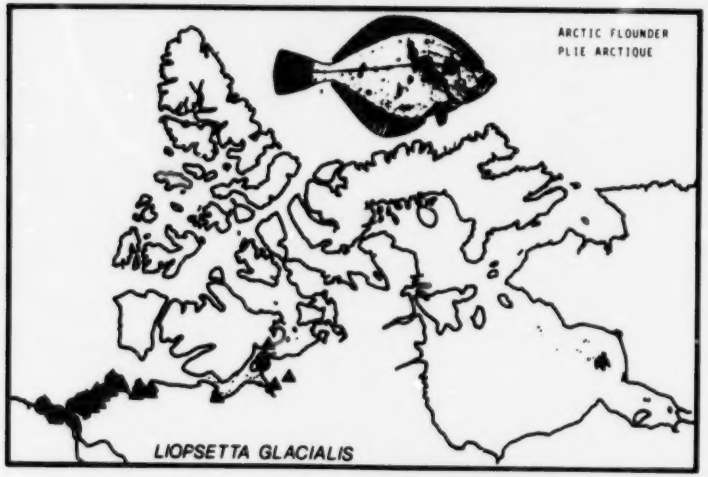

NINESPINE STICKLEBACK
ÉPINOCHE À NEUF ÉPINES
PUNGITIUS PUNGITIUS

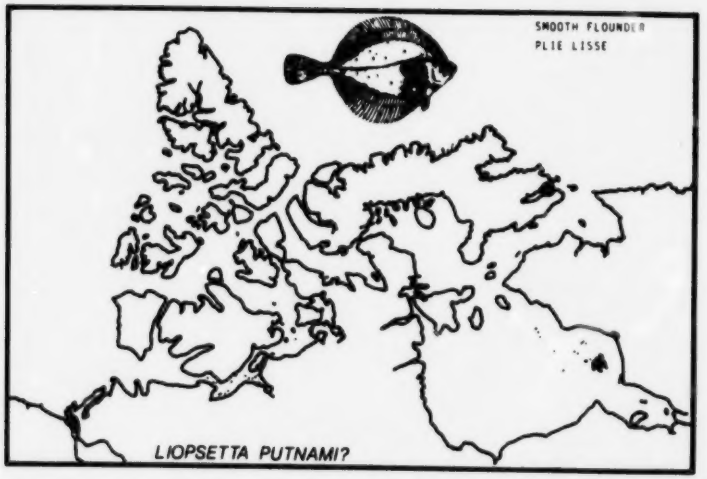
CANADIAN PLAICE
PLIE CANADIENNE
HIPPOGLOSSOIDES PLATESSOIDES


BERING FLOUNDER
PLIE DE BERING
HIPPOGLOSSOIDES ROBUSTUS

LONGHEAD DAB
LIMANDE CARLINE
LIMANDA PROBOSCIDEA

Plate 20


ARCTIC FLOUNDER
PLIE ARCTIQUE
LIOPSETTA GLACIALIS


SMOOTH FLOUNDER
PLIE LISSE
LIOPSETTA PUTNAMI?

STARRY FLOUNDER
FLET ETOILÉ
PLATICHTHYS STELLATUS

GREENLAND HALIBUT
FLÉTAN DU GROENLAND
REINHARDTIUS HIPPOGLOSSOIDES

Plate 21

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